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October Work Session: IMM Proposals

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Objectives of Market Redesign

- To evaluate the alternative market redesign proposals, it is essential to first identify the market objectives.
- The objectives that most of the proposals appear to be pursuing include one or more of the following:
 1. Increasing the total capacity margin (would *not* have effectively addressed the outages from winter storm Uri)
 2. Improve the incentives of suppliers to be available and flexible under tight conditions (would have addressed the outages during URI)
 3. Mitigate the catastrophic effects of extended outages priced at \$9,000 per MWh (would have reduced the economic dislocations from URI)
- We propose three market changes that would primarily address objectives 2 and 3.
 - These two objectives most relevant for addressing concerns arising from winter storm Uri and the goals articulated by the Governor and PUC.

Importance of Real-Time Co-optimization

Well-designed markets produce efficient real-time energy and Ancillary Services (AS) prices that:

- Facilitate efficient use of existing resources in the short run; and
- Provide economic signals that will guide participants longer-term capital investment, retirement, and contracting decisions.

The Real-Time Co-optimization project should remain a top priority as it improves both reliability and efficiency:

- Lower overall costs of satisfying the system's energy and AS needs
- Efficient prices during both shortage and non-shortage conditions
- More effective congestion management (reducing congestion costs and regulation service usage)
- Fewer Reliability Unit Commitments and other manual operator actions
- More timely, reliable and economic scheduling of AS in Real-Time
- Less frequent operating reserve shortages

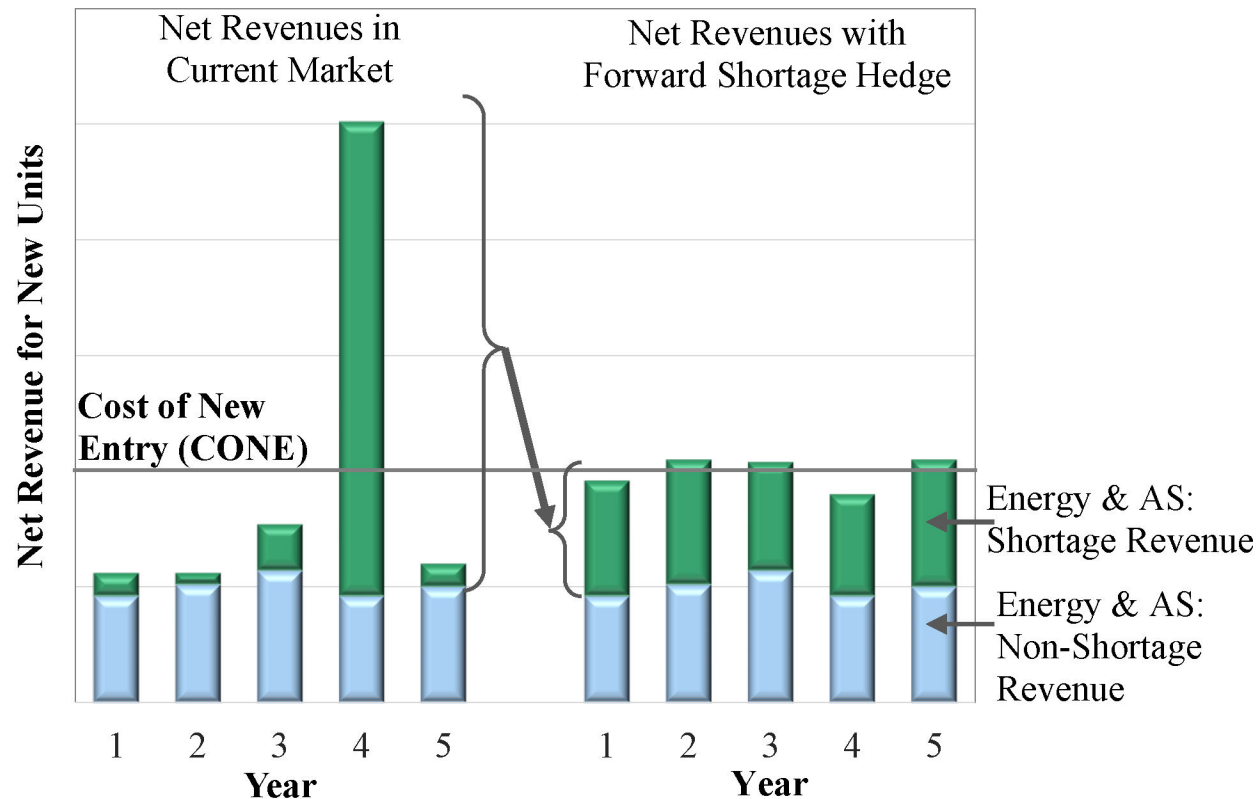
Proposal #1 – Forward Shortage Energy Hedge

- An energy-only market design can result in volatile costs and revenues
 - For participants that are not fully hedged, this volatility can have catastrophic effects
- ERCOT could facilitate a mandatory forward procurement of a hedging product on its shortage adder settlements
 - Seasonal or annual
 - LSEs could self-supply
- This product would ensure nearly complete hedging and smooth year-to-year changes in revenues.
 - Reduced volatility would improve incentives to invest in ERCOT

Proposal #1 – Forward Shortage Energy Hedge

Expected revenues equal to Cost of New Entry (CONE) are obtained under both approaches in the long run

- The hedging product smooths fluctuations over time.
- It would mitigate the effects of unhedged load buying in the spot market during extended or deep shortages.
- It maintains the same incentives to perform.
- It would sustain a more stable capacity margin.



Proposal #1 – Forward Shortage Energy Hedge

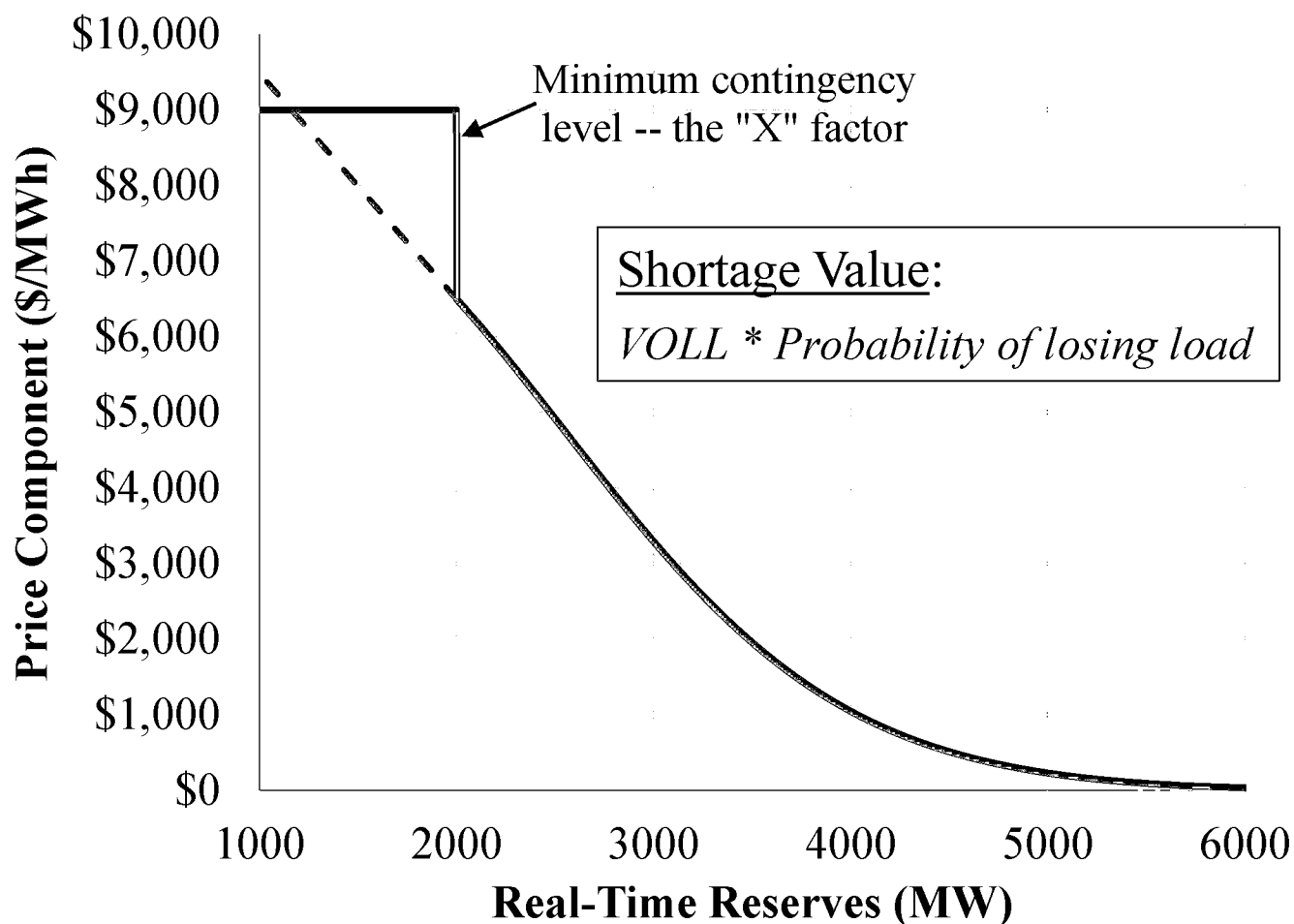
The key considerations in designing a Forward Shortage Energy product would include:

- Rules governing generators' offers to sell the hedge
 - Such rules must balance mitigating market power with not compelling suppliers to sell the hedge below its value
- Establishing the quantity of hedges to be procured (or self-supplied)
 - Managing imbalances from a financial perspective.
- A mechanism to address changes in loads served by competitive retailers
- Determining effect on credit/collateral needed to be held by ERCOT

Proposal #2 – Price Formation during Shortages

Reshape the ORDC to Shift Revenues Away from Extreme Shortages

- During shortages, the value of the foregone reserves should set the price for reserves and be embedded in the energy price.
- The ORDC does not strictly track the shortage value.



Proposal #2 – Price Formation during Shortages

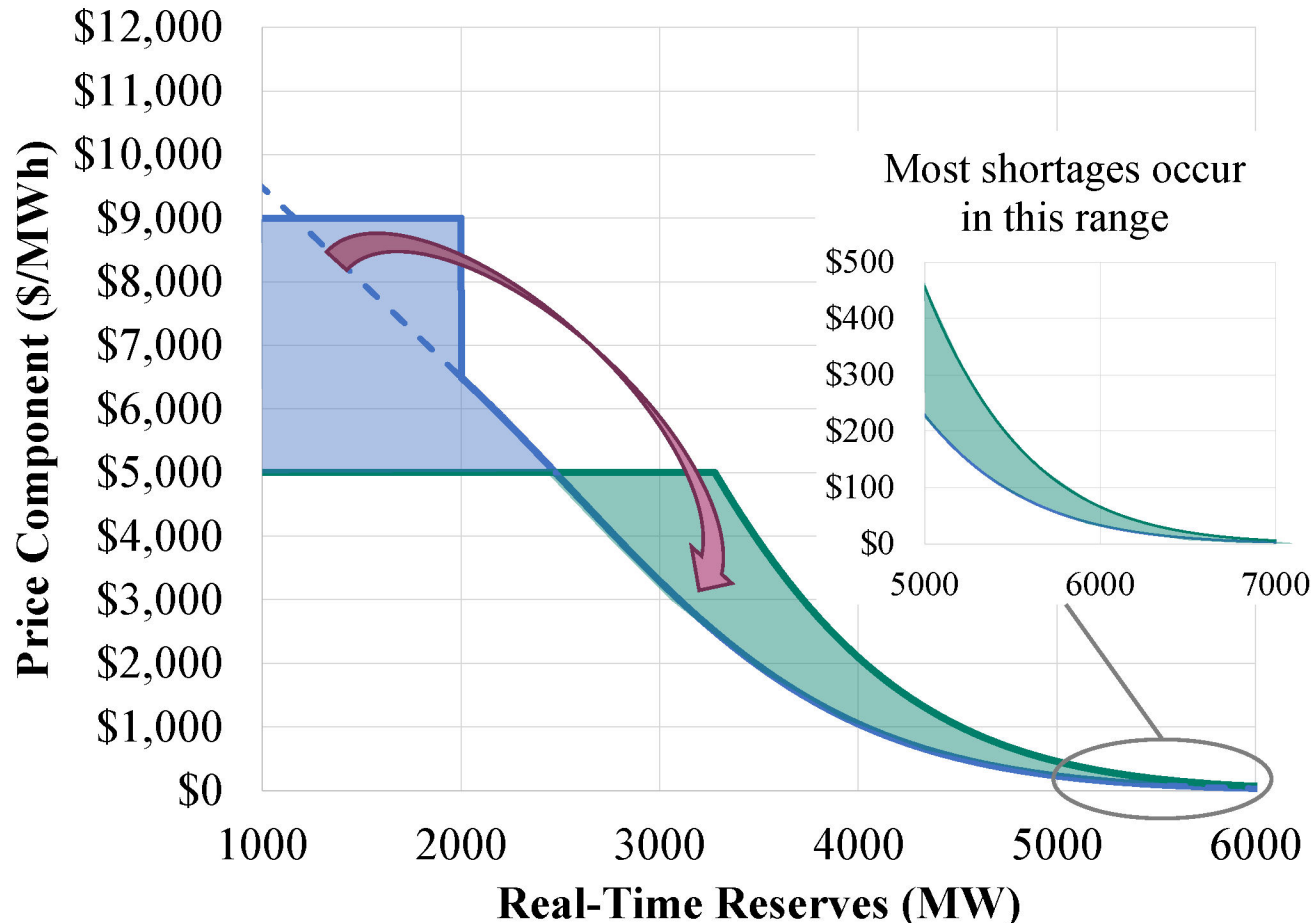
Reshape the ORDC to Shift Revenues Away from Extreme Shortages

- Issues with the current ORDC:
 - The current MCL artificially inflates shortage pricing before load is lost
 - The \$9,000 VOLL is lower than most studies would suggest and much lower than the VOLL that would be implied by most RTOs' reliability standards
 - The PUCT's desire to reduce the System-Wide Offer Cap (SWCAP) should be offset with higher revenue in other hours. We propose:
 - Lower the SWCAP – \$5,000 per MWh is used in the graph on the next slide;
 - Decrease the Minimum Contingency Level to 1,430 MW; and
 - Increase the Value of Lost Load (VOLL) used to calculate the ORDC to a more reasonable level.
- The figure shows an ORDC based on a VOLL of roughly \$20,000 per MWh.

Proposal #2 – Price Formation

The modified ORDC would shift revenues from less frequent extreme shortages to more frequent modest shortages.

- The increased VOLL is consistent with relevant studies
- Most of the higher revenues under the modified ORDC would occur in hours with low probabilities of losing load.



Proposal #3 – Uncertainty Product

If ERCOT continues to commit additional resources to account for uncertainty, ERCOT should create a reserve product to reflect this uncertainty.

- A 2 to 4-hour Ancillary Service that can be deployed when uncertainty results in tight real-time conditions. Such a product would be:
 - Accompanied by a modestly-priced reserve demand curve that is also calculated based on VOLL;
 - Procured in the day-ahead market and co-optimized with energy and the other current Ancillary Services;
 - Deployed to start up longer lead-time units when ERCOT detects operating conditions are departing from expected conditions; and
 - Less costly than holding excessive amounts of 30-minute reserves.
- This would allow ERCOT to reduce its Non-Spin requirement back to pre-July 2021 levels.